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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,258	08/01/2000	Marc Hoffman	ADI-005XX	7200

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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2124	9

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/630,258	HOFFMAN ET AL.	
	Examiner	Art Unit	
	Chat C. Do	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/6/2003; 11/5/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This communication is responsive to Amendment C, filed 2/19/2004.

2. Claims 1-8 are pending in the application. Claims 1, 5, and 8 are independent claims. In Amendment C, claims 1, 5, and 8 are amended. This action is made final.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being obvious over Nakai et al. (U.S. 6,115,728) in view of Witek et al. (U.S. 5,430,888).

Re claim 1, Nakai et al. disclose a method of computing a FFT in Figures 1-22 (first embodiment), the method comprising:

(a) receiving N time-ordered first data values (Figure 3 discloses the data input arrive in time-order for every symbol x(0)-x(N-1) and Figure 7 FFT processing [i+2]);

(b) sequentially storing in a first memory each of N time-ordered first data values (Figure 3 RAM#0 and col. 8 lines 30-32) in the time order (and Figure 7 FFT processing [i+2]);

(c) storing in a second memory a plurality of twiddle factors in a bit reversed order (104 in Figure 1 and Figure 8);

(d) reading R input butterfly data values of N first data values wherein R butterfly data values are separated by N/R first data value in N time-ordered first data value (N = 32, R = 4, and separated by 8 different groups of input data);

(e) performing a radix R butter fly calculation on R butterfly input data using at least one fo the plurality of twiddle factors stored in the second memory to generate R butterfly output data values(Figure 4 stage 0, this is a standard method of implementing FFT, the left data are the data that read from the RAM#0 using RAM address generator);

(f) sequentially storing R butterfly output data values in sequential memory locations of a third memory (RAM#1 and col. 8 lines 30-32); and

(g) performing steps (c) to (f) N/R x 2 times (compute other groups 1-7 in Figure 4)

wherein reading step (d) includes reading the R butterfly data values from third memory (RAM #1 and col. 8 lines 30-32).

Nakai et al. do not disclose the memory store operation performed in storing step (f) has a unity stride, thereby allowing R butterfly data values to be read from contiguous memory locations each time the R butterfly data values are read from third memory. However, Witek et al. disclose the advantage and operations of loading and storing operations in a unity stride whenever the storing is unity stride, the stored elements are stored contiguously in memory for ease of accessing and loading (col. 12 lines 17-25 and Figure 9). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the memory storing the results of operations performed in step (f) has a unity stride as seen in Witek et al.'s invention into Nakai et

al.'s invention because it would enable to load or access the stored elements in a memory efficiently (col. 12 lines 17-25).

Re claim 2, Nakai et al. further disclose in Figure 6 the steps of replacing N of first data values in first memory (SYMBOL INPUT RAM) with selected ones of R butterfly output data stored in third memory location (SYMBOL OUTPUT RAM); and repeating steps (c) – (g) a total of $\log_r (n)$ times (Figure 32 wherein r = 2 and n = 8; therefore $\log_2 (8) = 3$ stages to be performed and Figures 8 and 16).

Re claim 3, Nakai et al. further disclose in Figure 5 R is equal to 2 (middle box; radix-2 butterfly operation).

Re claim 4, Nakai et al. further disclose in Figure 5 R is equal to 4 (top box; radix-4 butterfly operation).

Re claim 5, it is an apparatus claim of claim 1. Thus, claim 5 is also rejected under the same rationale in the rejection of rejected claim 1.

Re claim 6, it is an apparatus claim of claim 3. Thus, claim 6 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 7, it is an apparatus claim of claim 4. Thus, claim 7 is also rejected under the same rationale in the rejection of rejected claim 4.

Re claim 8, it is a DSP apparatus claim of claim 1. Thus, claim 8 is also rejected under the same rationale in the rejection of rejected claim 1.

Response to Arguments

5. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2124

March 4, 2004

KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100